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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,435	11/06/2000	Debra D. Wawro	UTSL:058US	9722

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EXAMINER	
KAO, CHIH CHENG G	
ART UNIT	**PAPER NUMBER**
2882	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H·A

Office Action Summary	Application No.	Applicant(s)	
	09/707,435	WAWRO ET AL.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-12,14-20,24-34,38-51,61 and 62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-12,14-20,24-34,38-51,61 and 62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. (US 6055262) in view of Peters (US 5812571).

Cox et al. discloses a device, system, and method comprising at least one waveguide having an end, the end having an endface (fig. 2, #70), and a guided-mode resonance waveguide grating (fig. 2, #52, and col. 6, lines 19-39) fabricated on the endface of the at least one waveguide (fig. 2, #70), the guided-mode resonance waveguide grating having at least one waveguide layer (fig. 2, #66) and at least one grating layer (fig. 2, #58).

However, Cox et al. fails to disclose a fiber.

Peters teaches a fiber (fig. 6, #84).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the device, system, and method of Cox et al. with the fiber of Peters, since one would be motivated to make such a modification for telecommunicating over longer distances (col. 1, lines 11-20) and reducing optical power loss (col. 1, lines 55-65) as implied from Peters.

2. Claims 4, 6, 8-12, 14, 15, 24, 26, 28-34, 46, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. and Peters as applied to claims 1 and 38 above, and further in view of Magnusson et al. (US 5598300).

3. Regarding claim 15, Cox et al. as modified above suggests a system and method as recited above.

However, Cox et al. fails to disclose a waveguide grating also having a plurality of parameters including at least one permittivity of at least one grating layer, permittivity of at least one waveguide layer, periodic structure of the at least one grating layer, grating fill factor of the at least one grating layer, thickness of the at least one waveguide layer, and the thickness of the at least one grating layer, the periodic structure of the at least one grating layer having a period less then at least one wavelength of the signal.

Magnusson et al. teaches a waveguide grating also necessarily having a plurality of parameters including at least one permittivity of at least one grating layer, permittivity of at least one waveguide layer, periodic structure of the at least one grating layer, grating fill factor of the at least one grating layer, thickness of the at least one waveguide layer, and the thickness of the at least one grating layer (col. 7, lines 23-27, and fig. 3a), the periodic structure of the at least one grating layer having a period less then at least one wavelength of the signal (col. 4, lines 60-67).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the system and method of Cox et al. as modified above with the grating of Magnusson et al., since one would be motivated to make such a modification for reduced sidebands and higher efficiency (col. 2, lines 17-26) as shown by Magnusson et al.

4. Regarding claims 4, 6, 24, 26, and 46, Magnusson et al. further teaches wherein at least one grating layer and at least one waveguide layer comprise a dielectric material (col. 2, lines 24-26, and col. 12, lines 48-50).

5. Regarding claims 8 and 28, Magnusson et al. further discloses wherein the at least one grating layer and the at least one waveguide layer comprise the same layer (fig. 1, d_n).

6. Regarding claims 9 and 29, Magnusson et al. further discloses wherein the at least one grating layer and the least one waveguide layer comprise different layers in contact with each other (fig. 1, d_{n-1} and d_n).

7. Regarding claims 10-12 and 30, Magnusson et al. further discloses at least a third layer comprising a dielectric material (col. 2, lines 24-26, and col. 12, lines 48-50) or metal (col. 12, lines 48-50) in contact with the at least one waveguide layer (fig. 1, d_{n-2}).

8. Regarding claims 14 and 31, Magnusson et al. further discloses a third layer (fig. 1, d_{n+1}) in contact with the at least one grating layer (fig. 1, d_n).

9. Regarding claims 32-34, a recitation with respect to the manner in which a claimed apparatus is intended to be employed fails to differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

10. Regarding claim 62, Magnusson et al. further discloses the grating and waveguide layers having different permittivities (fig. 1).

11. Claims 5, 7, 25, 27, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, and Magnusson et al. as applied to claims 1, 15, and 38 above, and further in view of Tibuleac ("Characteristics of Reflection and Transmission Waveguide-Grating Filters").

Cox et al. as modified above suggests a device, system, and method as recited above.

However, Cox et al. fails to disclose wherein at least one grating layer and at least one waveguide layer comprise a polymer.

Tibuleac teaches wherein at least one grating layer and at least one waveguide layer comprise a polymer (page 94, lines 1-3).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the device, system, and method of Cox et al. as modified above with the polymer of Tibuleac, since it would be within the general skill of a worker in the art to select a known material on the basis of its suitability. One would be motivated to make such a modification to more easily shape the layer and create a stronger material.

12. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, and Magnusson et al. as applied to claim 15 above, and further in view of Morgan (US 5978401).

Cox et al. as modified above suggests a system as recited above. Cox et al. further discloses wherein after a signal is propagated, it contacts the guided-mode resonance waveguide grating and is reflected from the grating in whole or in part, depending at least partially upon a plurality of variable parameters (fig. 2, #52).

However, Cox et al. fails to disclose a laser source, which is a continuous wave source, coupled to a proximal end for propagating a signal therethrough, and a photodetector operationally coupled.

Morgan teaches a laser source (fig. 1, #16), which is necessarily a continuous wave source (fig. 2, #104), coupled to a proximal end (fig. 1, PDs) for propagating a signal therethrough, and a photodetector operationally coupled (col. 6, line 2).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the system of Cox et al. as modified above with the laser source and detector of Morgan, since one would be motivated to make such a modification for higher speed communication paths (col. 1, lines 33-34) as implied from Morgan.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, Magnusson et al., and Morgan as applied to claim 19 above, and further in view of Lear (US 5633527).

Cox et al. as modified above suggests a system as recited above.

However, Cox et al. fails to disclose wherein a photodetector comprises silicon.

Lear wherein teaches a photodetector comprises silicon (col. 6, lines 18-20).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the system of Cox et al. as modified above with the silicon of Lear, since one would be motivated to make such a modification for better light transmission (col. 6, lines 18-25) as implied from Lear or ease of manufacturing.

14. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. and Peters as applied to claim 38 above, and further in view of Farah (US 5891747).

Cox et al. as modified above suggests a method as recited above.

However, Cox et al. fails to disclose cleaving.

Farah teaches cleaving (col. 5, lines 15-17).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the method of Cox et al. as modified above with the cleaving of Farah, since one would be motivated to make such a modification for more clean cuts (col. 5, lines 15-17) as implied from Farah.

15. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, and Tibuleac as applied to claim 40 above, and further in view of Grabbe (US 5863449).

Cox et al. as modified above suggests a method as recited above.

However, Cox et al. fails to disclose dipping.

Grabbe teaches dipping (col. 3, lines 30-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the method of Cox et al. as modified above with the dipping of

Grabbe, since one would be motivated to make such a modification for better protection (col. 3, lines 30-40) as implied from Grabbe.

16. Claims 42-44 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, Tibuleac, Grabbe, and Magnusson et al. as applied to claims 41 and 46 above, and further in view of Hobbs (WO 97/47997).

Cox et al. as modified above suggests a method as recited above.

However, Cox et al. fails to disclose holographic interferometry or photolithography patterning with etching.

Hobbs further teaches holographic interferometry (Page 1, "Field of Invention") or photolithography patterning (Page 2, top paragraph) necessarily with etching.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the method of Cox et al. as modified above with the patterning techniques of Hobbs, since one would be motivated to make such a modification to produce periodic structures more accurately (Page 1, "Field of Invention") as implied from Hobbs on a smaller scale with these well known techniques.

17. Claims 45, 47, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, Magnusson et al., and Tibuleac as applied to claims 40, 46, and 38 above, and further in view of Levenson et al. (US 5291574).

Cox et al. as modified above suggests a method as recited above.

However, Cox et al. fails to disclose spin coating, sputtering, or etching.

Levenson et al. teaches spin coating, sputtering, or etching (col. 2, lines 25-27 and 33-36).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the method of Cox et al. as modified above with the spin coating, sputtering, or etching of Levenson et al., since one would be motivated to make such a modification for more easily manufacturing at smaller dimensions (col. 2, lines 25-27 and 33-36) as implied from Levenson et al. with these well known techniques.

18. Claims 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. and Peters as applied to claim 38 above, and further in view of Dimos et al. (US 6096127).

Cox et al. as modified above suggests a method as recited above.

However, Cox et al. fails to disclose thermal evaporation, electron-beam evaporation, or liquid phase epitaxy.

Dimos et al. teaches thermal evaporation, electron-beam evaporation, or liquid phase epitaxy (col. 1, lines 30-40).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the method of Cox et al. as modified above with the various depositing methods of Dimos al., since these methods are well known in the art and since one would be motivated to make such modifications to deposit layers more evenly (col. 1, lines 30-50) as implied from Dimos et al.

19. Claim 61 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al., Peters, and Magnusson et al. as applied to claim 15 above, and further in view of Magnusson et al. ("Guided-mode resonance Brewster filter").

Cox et al. as modified above discloses a device and system as recited above.

However, Cox et al. fails to disclose the permittivities of the at least one waveguide and the at least one grating layer being the same.

Magnusson et al. (Letters) teaches the permittivities of the at least one waveguide and the at least one grating layer being the same (fig. 1, $n_s = n_{1L}$).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to include the device and system of Cox et al. as modified above with the same permittivities of Magnusson et al. (Letters), since one would be motivated to make such a modification for creating higher efficiency filters (abstract) as implied from Magnusson et al. (Letters).

Response to Arguments

20. Applicant's arguments with respect to claims 38-51 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed June 1, 2006, have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant appears to rely (i.e., a guided-mode resonance waveguide grating fabricated on *and directly attached to* the endface of the at least one fiber) are not recited in the rejected claim(s). Although the claims are interpreted

in light of the specification, limitations from the specification (i.e., the last paragraph on page 26) are not read into the claims. The combination of Cox et al. and Peters suggests a guided-mode resonance waveguide grating butt-coupled to the endface of at least one fiber as noted by applicant. This combination makes obvious and reads on a guided-mode resonance waveguide grating fabricated (i.e., manufactured) on the endface of the at least one fiber.

In conclusion, applicant's arguments are not persuasive, and claims remain rejected.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

gk

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER